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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/585,192	06/01/2000	Charles L. Zahm	GEH-01-060	4926

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EXAMINER

BROADHEAD, BRIAN J

ART UNIT	PAPER NUMBER
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3661

DATE MAILED: 07/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/585,192

Applicant(s)

ZAHM ET AL.

Examiner

Brian J. Broadhead

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 April 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1 through 31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no support in the originally filed specification for the limitation "wherein the heading represents both the direction of travel of the locomotive and which end of the locomotive is in the lead in the direction of travel of the locomotive". The Applicant cites page 1, lines 6-7, of the specification for support but that section merely mentions "determining movement and direction of a track bound transportation apparatus using GPS." This is not the same as "determining heading.... where heading represents both the direction of travel and which end of the locomotive is in the lead." The applicant also cites page 6, line 6, for support but the cited formula shows heading only, not direction of travel.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 1-31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

2. Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999). The term "heading" in claims 1-31 is used by the claim to mean "the direction of travel", while the accepted meaning as defined in the Merriam Webster's New Collegiate Dictionary, tenth edition, is "the compass direction in which the longitudinal axis of a ship or aircraft points." The term is indefinite because the specification does not clearly redefine the term. Heading and direction of travel can be the same in certain instances, but in some cases, they are not the same. For instance, when a train is traveling along or entering a curve the trucks on the train may turn causing the heading to not truly line up with the direction of travel. Heading, as it is conventionally defined, is a measure of attitude. While in the current invention it seems to be used as a measure of movement.

3. Claims 4 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. The claims recite a formula that is supposedly for heading rate but in the first paragraph, on page 6 of the specification, the formula is disclosed as being one for pitch rate.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. Claims 1-4, 12, 13, 14, 15-18, 28, 29, 30, and 31 are rejected under 35 U.S.C. 102(e) as being anticipated by Hrovat et al., 6184821.

1. Hrovat et al. disclose providing at least two satellite signal receivers on the vehicle at spaced locations along the length of the vehicle on lines 64-67, on column 3; determining a set of phase differences between satellite reference signals received by satellite receivers on lines 1-5, on column 4; determining an accurate heading of the vehicle during normal operation using the set of phase differences between the satellite

reference signals, whereby the heading represents the direction of travel of the vehicle and which end of the locomotive is in the lead in the direction of travel on lines 10-42, on column 4; determining a vector distance between the two antennas and using the equations in the claims on lines 18-24, on column 4, it is inherent to determine the vector described in Hrovat et al. using the formula; determining pitch by the equation in the claims on lines 25-26, on column 6; determining a position of the vehicle and accessing a database of track heading and grade to determine a present track heading and grade at the determined position of the vehicle on lines 26-55, on column 5; and determining distance traveled by the vehicle on lines 48-58, on column 2; and using the equation if the claim for distance traveled is inherent.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 5, 10, 11, 19, 24, 25, 26, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hrovat et al, as applied to claims 1 and 15 above, and further in view of Kumar, 5896947.

2. Hrovat et al. disclose all the limitations as set forth above. They do not disclose controlling the dispensing of track lubricant in accordance with track curvature; when the curvature is greater than a predetermined magnitude. Kumar teaches of the dispensing of track lubricant in accordance with track curvature and when the curvature is greater

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than a predetermined magnitude on columns 1, 2, and in the abstract. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the invention of Kumar with Hrovat et al., because such modification would make a track lubrication system that measures track curvature better which would make distributing the correct amount of lubricant easier.

3. Claims 6, 7, 8, 9, 20, 21, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hrovat et al. and Kumar et al., as applied above, and further in view of Bidaud, 6347265.

3. Hrovat et al. and Kumar et al. do not disclose the track curvature is determined from angular rotation determined from satellite signals and velocity; angular rotation is found from a gyro and vehicle speed from a tachometer; or finding curvature from lateral acceleration and velocity. Bidaud teaches of disclose the track curvature is determined from angular rotation and velocity on lines 20-30, on column 5; angular rotation is found from a gyro and vehicle speed from a tachometer on lines 20-30, on column 5; or finding curvature from lateral acceleration and velocity on column 5. Bidaud does not teach determined from angular rotation determined from satellite signals to measure curvature. Hrovat et al. discloses using satellite receivers with inertial sensors as backups for measurements on lines 15-20, on column 6. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the curvature finding methods of Bidaud in the invention of Hrovat et al. and Kumar et al. because such modification would allow the use of both satellite signals and inertial sensors to

both measure the same values and act as redundant systems, or to use both systems to improve accuracy of both measurements.

Response to Arguments

4. Applicant's arguments with respect to claims 1-31 have been considered but are moot in view of the new ground(s) of rejection. Hrovat et al. has been cited for disclosing the claimed invention. Hrovat et al. may cite a automobile as and example, but discloses his invention is applicable to all types of vehicles.

5. Applicant's arguments with respect to the 35 U.S.C. 112, second paragraph, rejection are not convincing because the way the limitation is written heading is being redefined in a way not consistent with its conventional definition. If applicant wants to claim determining the direction of travel, then claim it separately from heading since direction of travel is not necessarily heading.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Broadhead whose telephone number is 703-308-9033. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on 703-305-8233. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.

BJB
July 15, 2004

Thomas G. Black
THOMAS G. BLACK
SUPERVISORY PATENT EXAMINER
GROUP 3600